

ABSTRACT OF THE DISCLOSURE

A method performed by a first computer node for selecting a leader node to provide service to a plurality of other nodes in a multicast group, wherein each of the nodes communicates using multicast messages, comprises issuing a first election call message; receiving candidacy announcement messages from one or more leader candidate nodes in a specified time period; selecting a victor from among all leader candidate nodes from which candidacy announcement messages are received; receiving one or more victor announcement messages from one or more leader victor nodes for a second specified time period; resolving zero or more collisions among the victor announcement messages to result in selecting the leader node. One embodiment provides a dynamic secure protocol for electing a key server, such as a key server that is suited for use with a group key exchange protocol such as the Group Domain of Interpretation (GDOI). Public key signatures may be used to secure message exchanges and to provide for authentication of network nodes in a multicast group.